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Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Overall Protection of Human Health and the Environment						
Human Health	Not protective, does not meet RAOs 1 through 4	RAO 1 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR uncertain RAO 2 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR uncertain RAO 3 – Time to achieve protectiveness through MNR uncertain RAO 4 – Time to achieve protectiveness through MNR uncertain	RAO 1 – Within acceptable risk range post-construction RAO 2 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR less than B RAO 3 – Time to achieve protectiveness through MNR less than B RAO 4 – Time to achieve protectiveness through MNR less than B	RAO 1 – Within acceptable risk range post-construction RAO 2 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR less than D RAO 3 – Time to achieve protectiveness through MNR less than D RAO 4 – Time to achieve protectiveness through MNR less than D	RAO 1 – Within acceptable risk range post-construction RAO 2 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR less than D RAO 3 – Time to achieve protectiveness through MNR less than D RAO 4 – Time to achieve protectiveness through MNR less than D	RAO 1 – Within acceptable risk range post-construction RAO 2 – Not within acceptable risk range post-construction, would rely on MNR and ICs. Time to achieve protectiveness through MNR less than D RAO 3 – Time to achieve protectiveness through MNR less than D RAO 4 – Time to achieve protectiveness through MNR less than D
Environment	Not protective, does not meet RAOs 5 through 8	RAO 5 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR uncertain RAO 6 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR uncertain RAO 7 – Time to achieve protectiveness through MNR uncertain RAO 8 – Time to achieve protectiveness through MNR uncertain	RAO 5 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than B RAO 6 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than B RAO 7 – Time to achieve protectiveness through MNR less than B RAO 8 – Time to achieve protectiveness through MNR less than B	RAO 5 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than D RAO 6 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than D RAO 7 – Time to achieve protectiveness through MNR less than D RAO 8 – Time to achieve protectiveness through MNR less than D	RAO 5 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than E RAO 6 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than E RAO 7 – Time to achieve protectiveness through MNR less than E RAO 8 – Time to achieve protectiveness through MNR less than E	RAO 5 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than F RAO 6 – Unacceptable ecological risks remain post-construction. Time to achieve protectiveness through MNR less than F RAO 7 – Time to achieve protectiveness through MNR less than F RAO 8 – Time to achieve protectiveness through MNR less than F

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Compliance with ARARs						
Chemical-specific ARARs	Does not comply	Would be met over time through a combination of in-river remedial technologies and institutional controls	Would be met over time through a combination of in-river remedial technologies and institutional controls	Would be met over time through a combination of in-river remedial technologies and institutional controls	Would be met over time through a combination of in-river remedial technologies and institutional controls	Would be met over time through a combination of in-river remedial technologies and institutional controls
Location-specific ARARs	Do not apply	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation
Action-specific ARARs	Do not apply	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation	Complies. Would be addressed during design and implementation

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Long-term Effectiveness and Permanence						
Magnitude of Residual Risks	RAO 1 – No reduction in cancer risk of 4×10^{-4} RAO 2 – No reduction in cancer risk of 4×10^{-2}, child hazard of 600, and infant hazard of 210,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Does not reduce ecological HQ of 80 RAO 6 – Does not reduce ecological HQ of 100 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain	RAO 1 – Post-construction cancer risk reduced to less than 3×10^{-5} RAO 2 – Post-construction cancer risk reduced to 3×10^{-3}, child hazard to 70, and infant hazard to 15,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Reduces post-construction ecological HQ to less than 30 RAO 6 – Reduces post-construction ecological HQ to less than 10 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain	RAO 1 – Post-construction cancer risk reduced to less than 2×10^{-5} RAO 2 – Post-construction cancer risk reduced to 3×10^{-3}, child hazard to 50, and infant hazard to 12,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Reduces post-construction ecological HQ to less than 30 RAO 6 – Reduces post-construction ecological HQ to less than 10 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain	RAO 1 – Post-construction cancer risk reduced to less than 1×10^{-5} RAO 2 – Post-construction cancer risk reduced to 3×10^{-3}, child hazard to 40, and infant hazard to 8,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Reduces post-construction ecological HQ to less than 30 RAO 6 – Reduces post-construction ecological HQ to less than 5 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain	RAO 1 – Post-construction cancer risk reduced to less than 1×10^{-5} RAO 2 – Post-construction cancer risk reduced to 3×10^{-3}, child hazard to 30, and infant hazard to 7,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Reduces post-construction ecological HQ to less than 25 RAO 6 – Reduces post-construction ecological HQ to less than 5 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain	RAO 1 – Post-construction cancer risk reduced to less than 1×10^{-5} RAO 2 – Post-construction cancer risk reduced to 3×10^{-3}, child hazard to 30, and infant hazard to 6,000 RAO 3 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 4 – Note quantifiable. Time to achieve protectiveness through MNR uncertain RAO 5 – Reduces post-construction ecological HQ to less than 10 RAO 6 – Reduces post-construction ecological HQ to less than 5 RAO 7 – Not quantifiable. Time to achieve protectiveness through MNR uncertain RAO 8 – Not quantifiable. Time to achieve protectiveness through MNR uncertain

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Adequacy and Reliability of Controls	No engineering controls, existing fish advisories are unlikely to be protective and do not reduce risk to ecological receptors	Removal, capping, and thermal treatment are proven and reliable technologies. Long-term monitoring and eventual partial or complete replacement of materials left in place (caps/EMNR amendments) to ensure continued effectiveness long-term. ICs include fish consumption advisories and RNAs to protect caps. Effectiveness monitoring of controls includes periodic sampling of environmental and biotic media. Periodic inspections of buoys of other devices used to delineate RNAs.	Same as B, except additional O&M, ICs and monitoring would be required due to the increase in the acreage of caps.	Same as D, except additional O&M, ICs and monitoring would be required due to the increase in the acreage of caps.	Same as E, except additional O&M, ICs and monitoring would be required due to the increase in the acreage of caps.	Same as F, except additional O&M, ICs and monitoring would be required due to the increase in the acreage of caps.
Reduction of Toxicity, Mobility or Volume through Treatment						
Treatment Process Used	No treatment processes utilized	Activated carbon, organophilic clay, Solidification/ stabilization	Same as Alternative B	Same as Alternative B	Same as Alternative B	Same as Alternative B
Amount Destroyed or Treated	No amount of contaminants will be destroyed or treated	83 acres treated in-situ 330,000 cy treated ex-situ	123 acres treated in-situ 395,000 cy treated ex-situ	197 acres treated in-situ 442,000 cy treated ex-situ	203 acres treated in-situ 506,000 cy treated ex-situ	238 acres treated in-situ 528,000 cy treated ex-situ
Reduction in Toxicity, Mobility, or Volume	No reduction through treatment	7 acres broadcast activated carbon 19 acres reactive caps 55 acres reactive residual layer 2 acres significantly augmented reactive cap	3 acres broadcast activated carbon 27 acres reactive caps 92 acres reactive residual layer 3 acres significantly augmented reactive cap	0 acres broadcast activated carbon 39 acres reactive caps 155 acres reactive residual layer 13 acres significantly augmented reactive cap	0 acres broadcast activated carbon 67 acres reactive caps 166 acres reactive residual layer 4 acres significantly augmented reactive cap	0 acres broadcast activated carbon 83 acres reactive caps 187 acres reactive residual layer 4z acres significantly augmented reactive cap

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Irreversible Treatment	No irreversible treatments utilized	Activated carbon in-situ treatment considered permanent and irreversible Low-temperature thermal desorption, with secondary treatment such as catalytic oxidation or carbon absorption) is considered permanent and irreversible Solidification/ stabilization form stable solids that are non-hazardous or less-hazardous than the original materials	Same as Alternative B	Same as Alternative B	Same as Alternative B	Same as Alternative B
Type and Quantity of Residuals Remaining after Treatment		Would not address 69% of PTW	Would not address 46% of PTW	Would not address 3% of PTW	Would not address 1% of PTW	Would not address 1% of PTW
Implementability						
Ability to Construct and Operate	Construction or operation is not conducted.	Easy to construct. Would require 314,000 cy material handling and 872,000 cy dredge material.	More extensive than Alternative B. Would require 574,000 cy material handling and 1,637,000 cy dredge material.	More extensive than Alternative D. Would require 866,000 cy material handling and 2,838,000 cy dredge material.	More extensive than Alternative E. Would require 1,608,000 cy material handling and 5,951,000 cy dredge material.	More extensive than Alternative F. Would require 2,434,000 cy material handling and 9,278,000 cy dredge material.
Ease of Doing More Action, if Needed	May require ROD amendment in the future	Easy to extend extent of construction activities	Easy to extend extent of construction activities	Easy to extend extent of construction activities	Easy to extend extent of construction activities	Easy to extend extent of construction activities

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Ability to Monitor Effectiveness	Monitoring not required. Ongoing potential for consuming contaminated fish and shellfish as well as exposures to other media.	Monitoring and maintenance inspections will give notice of failure before significant exposure occurs.	Monitoring and maintenance inspections will give notice of failure before significant exposure occurs.	Monitoring and maintenance inspections will give notice of failure before significant exposure occurs.	Monitoring and maintenance inspections will give notice of failure before significant exposure occurs.	Monitoring and maintenance inspections will give notice of failure before significant exposure occurs.
Ability to Obtain Approvals and Coordinate with Other Agencies	No approvals necessary.	Approvals required.	Approvals required.	Approvals required.	Approvals required.	Approvals required.
Availability of Specialists, Equipment and Materials	Services, equipment, and materials are not required.	Dredge operators required. Material placement experts required. Equipment and materials readily accessible.	Specialists and equipment are needed for longer duration than Alternative B. More material is needed than Alternative B.	Specialists and equipment are needed for longer duration than Alternative D. More material is needed than Alternative D.	Specialists and equipment are needed for longer duration than Alternative E. More material is needed than Alternative E.	Specialists and equipment are needed for longer duration than Alternative F. More material is needed than Alternative F.
Availability of Technologies	Technologies to address contaminated media are not required.	All technologies readily available.	All technologies readily available.	All technologies readily available.	All technologies readily available.	All technologies readily available.
Short Term Effectiveness						

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Community Protection	No impacts to the community due to construction Continued risks from uncontrolled exposures. OHA fish advisories would continue	Impacts to community for ~2 years Temporary noise, light, odors, air quality impacts. Disruptions to commercial and recreational river use, potential for waterborne accidents during construction Increased vehicular traffic, increased accident risk and air-quality issues Least amount of dredged and borrow materials requiring handling and transport. Exposure to contamination greater than PRGs controlled through ICs Controllable, addressed through implementation of health and safety plans and use of BMPs	Impacts to community longer than for Alternative B	Impacts to community longer than for Alternative D	Impacts to community longer than for Alternative E	Impacts to community longer than for Alternative F
Worker Protection	No risk to workers	Physical hazards during construction Increased accident risks from transport of materials and increased vessel traffic. Controllable, addressed through BMPs and H&S Plans.	Risk to workers for longer duration than for Alternative B	Risk to workers for longer duration than for Alternative D	Risk to workers for longer duration than for Alternative E	Risk to workers for longer duration than for Alternative F

Criteria	Alternative A	Alternative B	Alternative D	Alternative E	Alternative F	Alternative G
Environmental Impacts	No impacts to the environment due to construction activities Existing environmental impacts will continue	Ecological impacts from construction activities. Temporary loss of benthos and habitat, increased emissions from construction and transportation equipment. Exposure to contamination greater than PRGs during MNR period Controllable through BMPs, engineering control measures, emissions control strategies.	Ecological Impacts for longer period than for Alternative B	Ecological Impacts for longer period than for Alternative D	Ecological Impacts for longer period than for Alternative E	Ecological Impacts for longer period than for Alternative F
Time Until Action is Complete	Would not achieve RAOs within a reasonable timeframe	Estimated construction time ~4 years. Estimated time to achieve RAOs is uncertain, but less than for A.	Estimated construction time ~5 years. Estimated time to achieve RAOs is uncertain, but less than for B.	Estimated construction time ~7 years. Estimated time to achieve RAOs is uncertain, but less than for D.	Estimated construction time ~12 years. Estimated time to achieve RAOs is uncertain, but less than for E.	Estimated construction time ~18 years. Estimated time to achieve RAOs is uncertain, but less than for G.
Cost	Total present value (PV) cost = $0	Total = $790,870,000 (PV) Capital = $703,906,000 O&M = $0 Periodic = $337,522,000	Total = $1,105,550,000 (PV) Capital = $1,023,004,000 O&M = $0 Periodic = $460,170,000	Total = $1,490,610,000 (PV) Capital = $1,452,748,000 O&M = $0 Periodic = $651,834,000	Total = $2,053,600,000 (PV) Capital = $2,388,798,000 O&M = $0 Periodic = $803,150,000	Total = $2,446,450,000 (PV) Capital = $3,355,667,000 O&M = $0 Periodic = $977,724,000